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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/932,703	08/17/2001	Charles Calvin Byers	39-1	5762

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EXAMINER	
NGUYEN, CHAU M	

ART UNIT	PAPER NUMBER
2633	

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Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/932,703	Applicant(s) BYERS ET AL.	
	Examiner Chau M Nguyen	Art Unit 2633	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *17 August 2001*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-41* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-41* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date *4, 6*.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

2. Claims 1, 2, 3, 5-12, 19, 20, 23-25, 27, and 34-36 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin et al. (Hereinafter "Lin") (U.S. Pat. No. 5,256,869) in view of Kanterakis et al. (Hereinafter "Kanterakis ") (U.S. Pat. No. 6,008,918).

As claim 1, Lin discloses system to provide internal communication in a stored program controlled system comprising a plurality of processing units (see Abstract), said system comprising:

a free space beam line (fig. 1A) configured to contain optically signals transmitted among said plurality of processing units (PE(1), PE(2), ...) (col. 3, lines 54-56);

means (such as PE1 and 13a) in one of said plurality of processing units for injecting optically signals into said beam line (col. 3, lines 56-58); and

means (such as PE6 and 14c) connected to each of said plurality of units for receiving optically signals from said beam line (col. 3, lines 58-60).

Lin discloses signal to be modulated in the process. Lin does not clearly show signal to be encoded.

However, Kanterakis discloses signals can be encoded (Kanterakis, col. 8, lines 42-43). Since both references are related to the optical interconnecting processing. Therefore, it would have obvious to one having ordinary skill in the art at the time of the invention was made to encode signals as taught by Kanterakis into the system of Lin in order to generate encoded signal. One would have motivated for doing this since with encoded signals, it supports the system with multiple data processor in ultra-high speed (Kanterakis, col. 1, lines 13-15).

As claim 2, Lin discloses each processing units are configured to process signals and perform one or more functions in response to signals (col. 1, lines 33-40).

As claim 3, Lin discloses a photodetector (14, fig. 1A) for converting modulated signal into electrical signal and is connected to processing units (col. 3, lines 58-65).

As claim 5, a first terminal unit (such as 13a, fig. 1A of Lin) at the first end of free space beam line is configured to transmit optical signals.

As claim 6, a first terminal unit (such as 14a, fig. 1A of Lin) is configured to receive optical signals.

As claim 7, a second terminal unit (such as 14c, fig. 1A of Lin) is configured to receive optical signals.

As claim 8, a second terminal unit (such as 13c, fig. 1A of Lin) is configured to transmit optical signals.

As claims 9, 12, 34 and 35, Lin (fig. 1A) shows second terminal unit (13c) is configured to send signals to first terminal unit (14a) via a means (denoted 18) (mirror or router) for routing function as a loop and for transmitting signals separate from said free space beam line (col. 5, lines 57-60).

As claim 10, Lin also mentions the use of optical fiber in the system (Lin, col. 1, lines 24-26).

As claim 11, Lin (fig. 1A) shows a second free space beam line (dash arrow line from 13b to 14c).

As claim 19, Lin discloses means (13a) for transmitting optically encoded signals into free space beam line associated with one or more means for receiving optical signals (such as 14b , 14c) (see fig. 1A, col. 3, lines 63-65).

As claims 20, 23-25 and 27, the system of Lin comprises probe with transmitter and receiver (13 and 14, fig. 1A) for bi-directional.

As claim 36, Lin discloses a method for transporting signals among units in a stored program controlled system, said method comprising the steps of:

optically modulated said signals (col. 2, lines 24-25);

transmitting said optically modulated signals in a free space beam line (col. 2, line 26);

receiving said optically modulated signals at each of said processing units (col. 2, lines 35-37);

Lin discloses the light is modulated. Lin does not clearly show the encoded signal and for further transmitting encoded signals from each of said processing units.

However, Kanterakis discloses signals can be encoded (Kanterakis, col. 8, lines 42-43); and after the light reached to a processing unit (25, Kanterakis, fig. 3) the signals can be further transmitted (such as through path 26) (Kanterakis, col. 5, lines 1-5). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to encode signals as it is taught by Kanterakis to further transmit the signal from a processing unit in order to have encoded signals and to transmit the encoded to next stage (as cited in the claimed invention). One would have motivated for doing this since with encoded signals, it supports the system with multiple data processor in ultra-high speed (Kanterakis, col. 1, lines 13-15).

3. Claim 4 is rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. Pat. No. 5,256,869) in view of Kanterakis (U.S. Pat. No. 6,008,918) as applied in the claim 1, and in further view of Sauter (U.S. Pat. No. 6,240,157 B1).

As claim 4, the combination system of Lin and Kanterakis, as described in the claim 1, differs from the claimed invention in that, Lin and Kanterakis do not show means for receiving optically encoded signals are distributed helically in said free space beam line. However, Danielson teaches helically receiving light signals detector (16) (receiving means) (fig. 1, col. 1, lines 17-21). Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention was made to receive optical signal (receiving means) helically as taught by Danielson into the combination system of Lin and Kanterakis in order to receive optical signals. One would have motivated to do this for equally obtaining the distribution to each, and further, for reducing the size of detector (Danielson, col. 5, lines 26-37).

4. Claims 13 –18 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. Pat. No. 5,256,869) in view of Kanterakis (U.S. Pat. No. 6,008,918) as applied in the claim 1, and in further view of Willebrand (U.S. Pat. No. 6,239,888 B2).

As claims 13 and 14, the combination system of Lin and Kanterakis, as described above, differs from the claimed invention in that, both Lin and Kanterakis do not clearly show free space beam line to be in a conduit (claimed limitation 13) and unenclosed (claimed limitation 14). However, Willebrand discloses a free space interconnection system is in a conduit (see fig. 12 and col. 1, lines 50-53), and free space beam line is unenclosed (see figs. 13 & 14). Therefore, it would have been obvious to one having ordinary skill in the art to establish a free space beam line to be in a conduit and

unenclosed as taught by Willebrand into the combination of Lin and Kanterakis in order to create a system with more reliable communication (Willebrand, col. 1, lines 13-17.)

As claims 15-18, Willebrand discloses both reflective and absorptive effects of interior surface (col. 10, lines 53-55 and col. 10, line 67- col. 11, lines 3).

As claim 33, Willebrand also discloses an alignment beam (pilot beam) (col. 16, lines.

5. Claims 21, 22, 26, 28-30 and 37-41 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. Pat. No. 5,256,869) in view of Kanterakis (U.S. Pat. No. 6,008,918) as applied in the claims 1 and 36 , and in further view of Sauter (U.S. Pat. No. 5,245,680).

As claims 21, 22, 26, 28-30 and 37-41, the combination system of Lin and Kanterakis differs from the claimed invention in that, it does not show processing units comprises a frame, said frame having a plurality of cards for performing functions and wherein said frame receives optically encoded signals from said means for receiving optically encoded signals, translates said optically encoded signals into electronically encoded signals, and performs functions related to said plurality of cards. However, Sauter discloses the processing unit including cards (such as 14, 16, 20, 118, see fig. 2) for performing functions and wherein frame receives optical signals (through 116), converts to electrical signals and transmits optical signals (through 114) after converted

from electrical signals (Sauter, col. 8, lines 4-7, col. 8, lines 43-48). Therefore, it would have been obvious to one having ordinary skill in the art to associate frame having plurality of cards as taught by Sauter into the combination of Lin and Kanterakis in order to perform functions. One would have motivated for doing this since for enhancement the system in real time changing between massively parallel processing algorithms, having differently interconnected process elements (Sauter, col. 2, lines 43-52).

6. Claims 31, 32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Lin (U.S. Pat. No. 5,256,869) in view of Kanterakis (U.S. Pat. No. 6,008,918) in view of Sauter (U.S. Pat. No. 5,245,680), as applied in the claim 28, and in further view of Trutna, Jr. et al. (Hereinafter "Trutna") (U.S. Pat. No. 6,658,212 B1).

As claim 31, the combination of Lin, Kanterakis and Sauter as described above in that, Sauter discloses free space beam line to distribute to shelves via mirrors (134, 136,.., see fig. 3) (Sauter, col. 9, lines 24-27). Lin, Kanterakis and Sauter still differs from the claim invention wherein they do not clearly show turning mirrors. However, Trutna discloses a turning mirror (34, fig. 1B) is used to transmit signal to a destination (Trutna, col. 12, lines 21). Therefore, it have been obvious to one having ordinary skill in the art at the time of the invention to use a turning mirror to direct the light beam to shelves. One would have motivated for doing this since with turning mirror, the light beam is exactly focused to the device, and therefore, it eliminates the cross-talk (Trutna, col. 5, lines 20-22).

As claim 32, the combination system of Lin, Kanterakis, Sauter and Trutna discloses the claimed invention except for the turning mirror is an partially silvered mirror. I would have been obvious to one having ordinary skill in the art at the time the invention was made to use a such mirror or another kind of mirror for directing the light beam, since it has been held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice. *In re Leshin, 125 USPQ 416.*

Conclusion

7. The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Lemson (U.S. Pat. No. 5,678,198) is cited to show system for controlling signal level at both ends of a transmission link, based upon a detective value.

Jacobsen (U.S. Pat. No. 5,673,131) is cited to show high density, three-dimensional intercoupled circuit structure.

Sekendur (U.S. Pat. No. 5,852,434) is cited to show absolute optical position determination.

Tang et al. (U.S. Pat. No. 6,701,181 B2) is cited to show multi-path optical catheter.

Shattil (U.S. Pub. No. 2001/0046255 A1) is cited to show spread spectrum communication method and system using diversity correlation and multi-user detection.

8. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Chau M. Nguyen whose telephone number is 703-305-8965. The examiner can normally be reached on Mon-Fri from 8:00 AM to 5:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Jason Chan can be reached on 703-305-4726. The fax phone number for the organization where this application or proceeding is assigned is (703) 872-9306.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the receptionist whose telephone number is 703-305-3900.

C.M.N.
Jun. 14, 2004

M.R. Sedighian

M.R. SEDIGHIAN
Primary Examiner
Art Unit: 2633